Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (original): A synthetic polynucleotide comprising a DNA sequence encoding an HCV protein selected from the group consisting of HCV core protein, HCV E1 protein, HCV E1+E2 protein, HCV NS5a protein, HCV NS5b protein and fragments thereof, the DNA sequence comprising codons optimized for expression in a vertebrate host.

Claim 2 (original): A plasmid vector comprising the polynucleotide of Claim 1, the plasmid vector being suitable for immunization of a vertebrate host.

Claim 3 (original): The polynucleotide of Claim 1 which is HCV genotype I/Ia core.

Claims 4-7 (cancelled)

Claim 8 (original): A method for inducing immune responses in a vertebrate against HCV epitopes which comprises introducing between 1 ng and 100 mg of the polynucleotide of Claim 1 into the tissue of the vertebrate.

Claim 9 (original): A method for inducing immune responses against infection or disease caused by HCV which comprises introducing into the tissue of a vertebrate the polynucleotide of Claim 1.

Claim 10 (original): A vaccine for inducing immune responses against HCV infection which comprises the polynucleotide of Claim 1 and a pharmaceutically acceptable carrier.

Claim 11 (original): A method for inducing anti-HCV immune responses in a primate which comprises introducing the polynucleotide of Claim 1 into the tissue of said primate and concurrently administering interleukin-12 parenterally.

Claim 12 (original): A method of inducing an antigen presenting cell to stimulate cytotoxic and helper T-cell proliferation an effector functions including lymphokine secretion specific to HCV antigens which comprises exposing cells of a vertebrate in vivo to the polynucleotide of Claim 1.

Claim 13 (original): A method of treating a patient in need of such treatment comprising administering to the patient the polynucleotide of Claim 1 in combination with interferon-alpha, Ribavirin, Zidovudine, or other pharmaceutically acceptable antiviral agents..

Claim 14 (original): A pharmaceutical composition comprising the polynucleotide of Claim 1.

Claim 15 (original): A method of inducing an immune response comprising administering the polynucleotide of Claim 1 to a patient, the administration of the polynucleotide antedating or coinciding or following administration to the patient of a subunit, recombinant, recombinant live vector, inactivated, recombinant inactivated vector, or live attenuated HCV vaccine.

Claim 16 (original): A method for inducing immune responses in a vertebrate against HCV epitopes which comprises introducing between 1 ng and 100 mg of the polynucleotide of Claim 2 into the tissue of the vertebrate.

Claim 17 (original): A method for inducing immune responses against infection or disease caused by HCV which comprises introducing into the tissue of a vertebrate the polynucleotide of Claim 2.

Claim 18 (original): A vaccine for inducing immune responses against HCV infection which comprises the polynucleotide of Claim 2 and a pharmaceutically acceptable carrier.

Claim 19 (original): A method for inducing anti-HCV immune responses in a primate which comprises introducing the polynucleotide of Claim 2 into the tissue of said primate and concurrently administering interleukin 12 parenterally.

Claim 20 (original): A method of inducing an antigen presenting cell to stimulate cytotoxic and helper T-cell proliferation an effector functions including lymphokine secretion specific to HCV antigens which comprises exposing cells of a vertebrate in vivo to the polynucleotide of Claim 2.

Claim 21 (original): A method of treating a patient in need of such treatment comprising administering to the patient the polynucleotide of Claim 2 in combination with interferon-alpha, Ribavirin, Zidovudine, or other pharmaceutically acceptable antiviral agents..

Claim 22 (original): A pharmaceutical composition comprising the polynucleotide of Claim 2.

Claim 23 (original): A method of inducing an immune response comprising administering the polynucleotide of Claim 2 to a patient, the administration of the polynucleotide antedating or coinciding or following administration to the patient of a subunit, recombinant, recombinant live vector, inactivated, recombinant inactivated vector, or live attenuated HCV vaccine.

Claims 24-25 (cancelled)

Claim 26 (original): The DNA sequence of Claim 1 selected from the group consisting of a nucleotide sequence shown in Figure 5, Figure 9, Figure 10, Figure 11, Figure 12 and Figure 13.